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ABSTRACT

Information is provided regarding major learning styles and other factors important to student learning. Several typically asked questions are presented regarding different learning styles (visual, auditory, tactile and kinesthetic, and multisensory learning), associated considerations, determining individuals' learning styles, and appropriate responses to learning style differences. Information on each of 10 learning style inventories and one teaching style inventory is presented in outline form. The learning style inventories include the: (1) CITE Learning Styles Instrument (A. M. Babich and others); (2) Child Rating Form (Manuel Ramirez and Alfred Castaneda); (3) Learning Style Inventory (Albert Canfield and others); (4) Learning Style Inventory (Rita Dunn and others); (5) Learning Style Inventory (Daniel Kolb); (6) Learning Style Identification Scale (P. Malcolm and others); (7) Learning Styles Inventory (Joseph Renzulli and Linda Smith); (8) Learning Style Profile (James W. Keefe and John S. Monk); (9) Paragraph Completion Method (David Hunt); and (10) Student Learning Styles Questionnaire (Anthony Graska and Sheryl Riechmann). The teaching style inventory includes the Instructional Styles Inventory (Albert Canfield and Judith Canfield). The outlines cover a brief discussion of the nature of the test items, target populations, norm groups, purpose, subcomponents, types of scores, scoring methods, validity and reliability information, copyright status, publisher, and date of most recent manual. An observational checklist is provided to help teachers assess student learning styles without using a test. (TJH)

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TITLE: LEARNING STYLES

University of Missouri-Columbia
401 East Stewart Road
Columbia, MO 65211
(800) 392-0533 in Missouri only
(314) 882-2733

ABSTRACT: Information is provided regarding major learning styles and other factors important to student learning. A sample inventory is provided as well as strategies and further resources for learning and teaching styles.

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LEARNING STYLES

Overview

Many people are concerned about why some students do better in school than others. Part of this may be due to differences in learning styles. For example, pupils who learn best through hands-on experience may learn little from readings and films. Researchers who have identified major types of learning styles have provided us with tests we can use to determine what an individual's learning styles are and have identified many adaptations to help individuals with different capabilities learn at their maximum potentials.

Frequently Asked Questions

Q. WHAT ARE SOME DIFFERENT TYPES OF LEARNING STYLES?

A. Dunn and Dunn (1978) have identified four types of learners. They are:

Visual learners who learn from looking. They learn best from visual modes of communication, such as films, handouts, books, a chalkboard, graphs, models, and pictures.

Auditory learners who learn by listening. They learn best from modes of communication that utilize sound. These include tapes, lectures, verbal explanations of written material, and noises that occur in their environment. They usually do well on oral exams and have good verbal skills. They may need to say what they read out loud to remember it better.

Tactile and kinesthetic learners who learn through hands-on experience. They need to touch and manipulate concrete materials. They also need to participate in (have direct experience with) an activity. For example, instead of hearing or reading about how to write a form letter, they need to practice writing it themselves.

Multisensory learners who learn best by combining two or more of the above types of learning. For example, a visual-auditory learner would learn more by watching a filmstrip with a tape.

Q. ARE THERE OTHER CONSIDERATIONS BESIDES THE FOUR MAJOR LEARNING STYLES?

A. Many other factors determine a person's ability to learn. They include:

Light - Most people can work well with normal variations in light.

Sound - Different students need more or less noise while they work. Some need complete quiet.

Temperature - Some students only work well within a particular temperature range.

Design - Some students need an informal (relaxed, casual) design, such as a room with soft chairs or sofas. Others need a formal (typical classroom) design.

Structure - Students who need structure want to know exactly what work is expected of them: specific directions as to how it is to be done, when it is due, and where to go to receive help. Others like to explore on their own, without rules to confine them, and with power to make some of their own decisions regarding what they do, when, and how they do it. These students need less structure.

Pace of work - Students with short attention spans need more time to complete tasks and need short breaks between work periods. They learn better when large tasks are broken down into smaller tasks that they can complete in a short period of time. Having a large amount of work to do at one time seems too formidable to them. Those who work faster and longer do not need these accommodations.

Social factors - Some children learn better from adults while others learn more from other children. Some work better alone, others with a group.

Time - Different people learn best at different times of the day. Thus, there are "morning people", "night people", etc.

Mobility - Some people need to stay in one place for long periods of time to learn. Others need to move from chair to chair or even walk around while studying.

Amount of activity - Some students learn best while doing something physically active, such as making something, working a puzzle, or playing a game. Others need to work at a desk quietly.

Reinforcement - Some students need frequent reinforcement for working hard and learning. Others need it less often.

Responsibility - Some students won't work unless someone sets a specific time when they should be working and tells them when progress has been made and what areas they are weak in and need more time studying on. Students who seem irresponsible need more self-confidence. Students who are more independent often are already confident in their abilities.

Variety - Some students like routines and familiarity while others need variety.

Intake - Some students need to eat, drink, smoke, or chew while working. Others don't.

Persistence - Some students always finish tasks. Others may start several tasks but never finish them.

Q. HOW DO YOU FIND OUT WHAT LEARNING STYLE FITS AN INDIVIDUAL BEST?

A. Different types of tests yield valuable information about a person's strengths and weaknesses. Personality preference inventories can tell us how an individual likes to go about his or her work. Tests that children take in class for a grade are also helpful. A person who does better on an oral test may have above average verbal ability; a good score on a pen-and-pencil test may indicate good writing skills.

Learning styles inventories are specifically designed to show teachers and students under what conditions a student learns best. The following is a list of inventories with some information about them.

C.I.T.E. LEARNING STYLES INSTRUMENT

A. M. Babich, P. Burdine, L. Albright and P. Randal

Target Population: Students

Norm Groups: Not available

Purpose of Instrument: Delineate styles of learning

Title of Subcomponents: Visual Language, Social-Individual, Auditory Numerical, Visual Numerical, Social-Group, Kinesthetic-Tactile, Auditory Language, Expressive-Oral, Expressive-Written

Types of Scores: Raw scores

Scoring Information: Hand scored

Validity: Not available

Reliability: Not available

Copyright: No copyright Date of Most Recent Manual: Not Given

Publisher: Murdock Teacher Center, Wichita Public Schools, Wichita, KS

Comments: Self-rating of each of the 45 statements on a four point scale. This instrument is in public domain.

Source of Information: Knaak, W. (1983)

NOTE: A copy of the C.I.T.E. can be obtained from Missouri LINC.

SOURCE: Career Assessment Instrument Resource Guide, Missouri LINC, 1986.

CHILD RATING FORM

Manuel Ramirez and Alfred Castaneda

Target Population: School age

Norm Groups: Not available

Purpose of Instrument: Match and mismatch learning and teaching styles

Goal: Encourage personal "biocognitive ability" that reduces favoring one style over another

Title of Subcomponents: Field Independence/Sensitivity and Cultural differences

Types of Scores: Not available

Scoring Information: Observer tallies frequency of behavior

Validity: Not available

Reliability: Not available

Copyright: 1974, revised version in New Frontiers by Pergamman Press, Inc.

Date of Most Recent Manual: Not Given

Publisher: Academic Press (Book: Cultural Democracy, Biocognitive Development & Education, 1974)

Comments: A direct observation checklist for teacher of young students and self-observation for older students

Source of Information: Knaak, W. (1983)

SOURCE: Career Assessment Instrument Resource Guide, Missouri LINC, 1986.

LEARNING STYLE INVENTORY

Albert and Judy Canfield; J. Canfield and Lafferty

Target Population: Grades 6 through adults

Norm Groups: 2,000 subjects; separate male and female norms

Purpose: Identify styles of learning

Title of Subcomponents: Conditions, Content, Mode, Expectation

Types of Scores: Not available

Scoring Information: Hand scored

Validity: Some studies support validity

Reliability: .96 Split Half

Copyright: 1976-1980 Date of Most Recent Manual: 1980

Comments: Administration: 15 minutes. Self-report instrument based on rank ordering of 30 statements. May be used independently or in conjunction with Instructional Styles Inventory. Separate sex norms may constitute a problem with Title IX funds.

Source of Information: Knaak, W. (1983); MMY 9:609.

SOURCE: Career Assessment Instrument Resource Guide, Missouri LINC, 1986.

LEARNING STYLE INVENTORY

Rita Dunn, Kenneth Dunn, and Gary Price

Target Population: Grades 3-12

Norm Groups: Not available

Purpose: Help students understand how they learn

Title of Subcomponents: Four areas are Environmental, Emotional, Sociological, and Physical, but 36 subscales.

Types of Scores: Not given

Scoring Information: Computer scored

Validity: Studies reflect predictive validity

Reliability: Not available

Copyright: 1978 Date of Most Recent Manual: Not Given

Publisher: Price Systems, Box 3271, Lawrence, KS 66044, or Learning Styles Network.

Comments: Self report format containing 104 items. Administration is approximately 30 minutes. An adult version is called Productivity Environmental Preference Survey. A version for primary age students was developed in 1981 by Janet Perrin.

Source of Information: Dunn, Rita. (1983).

SOURCE: Career Assessment Instrument Resource Guide, Missouri LINC, 1986.

LEARNING STYLE INVENTORY

Daniel Kolb

Target Population: Young adult

Norm Groups: Not available

Purpose: Individual awareness of personal learning style and available alternative modes.

Titles of Subcomponents: Feeling, Watching, Thinking, Doing

Types of Scores: Not available

Scoring Information: Hand scored

Validity: Not available

Reliability: Not available

Copyright: 1976 Date of Most Recent Manual: Not given

Publisher: McBer and Company, 137 Newbury Street, Boston, MA 02116

Comments: Administration: 5-10 minutes. Self-ranking of four words in each of nine sets.

Source of Information: Knaak, W.; MMY:607

SOURCE: Career Assessment Instrument Resource Guide, Missouri LINC, 1986.

LEARNING STYLE IDENTIFICATION SCALE

P. Malcolm, W. Lutz, M. Gerken, and G. Hoeltke

Target Population: Grades 1-8

Norm Groups: One urban and one rural Midwest school district

Purpose: Identify student's learning style and provide an efficient, practical, step-by-step method of teaching to that style.

Title Subcomponents: Internal Sources (feelings, beliefs, attitudes) and External (people, events, social institutions)

Types of Scores: T Scores

Scoring Information: Hand scored

Validity: Informal assessment. Teachers observe and rate students' behavior.

Reliability: Generally adequate

Copyright: 1981 Date of Most Recent Manual: 1981

Publisher: CTB/McGraw Hill

Comments: Administration: 10 - 20 minutes. Caution: Only 60% of the students fall into one of the four categories. The other 40% are labelled style V and are not described but constitute the largest group of students.

Source of Information: MMY 9:606

SOURCE: Career Assessment Instrument Resource Guide, Missouri LINC, 1986.

LEARNING STYLES INVENTORY

Joseph Renzulli and Linda Smith

Target Population: Grades 4-12

Norm Groups: Not normed

Purpose of Instrument: Identify styles of learning preferred by students

Title of Subcomponents: Attitudes toward 9 modes of instruction

Types of Scores: Number on each subscale

Scoring Information: Computer or hand scoring

Validity: Minimal date

Reliability: .77 internal

Copyright: 1978 Date of Most Recent Manual: Not given

Publisher: Creative Learning Press, Mansfield Center, Connecticut.

Comments: Both teacher and student forms; Likert type scale. Administration: 30 minutes. Items should be read to younger students. Based on a concrete approach to match projects, drill and recitation, peer teaching, discussion, teaching games, independent study, programmed instruction, lecture and simulation to student preference.

Source of Information: Keyser, D. & Sweetland, R., Vol. 2 (1984)

SOURCE: Career Assessment Instrument Resource Guide, Missouri LINC, 1986.

LEARNING STYLE PROFILE

James W. Keefe and John S. Monk

Target Population: Grades 6 - 12

Copyright: 1986

Publisher: National Association of Secondary School Principals, 1904
1904 Association Drive, Reston, VA 22091.

SOURCE: Learning Style Profile: Examiner's Manual, National Association of Secondary School Principals, 1986.

PARAGRAPH COMPLETION METHOD

David Hunt

Target Population: Grades 6 through adult

Publishers: OISE Publication Sales, 252 Bloor St. West, Toronto, Ontario, Canada

SOURCE: Career Assessment Instrument Resource Guide, Missouri LINC, 1986.

STUDENT LEARNING STYLES QUESTIONNAIRE

Anthony Graska and Sheryl Riechmann

Target Population: High School or College

Norm Groups: Not available

Purpose: Identify learning styles

Titles of Subcomponents: Independent, Avoidant, Collaborative, Dependent, Competitive, and Participant

Types of Scores: Not available

Scoring Information: Hand scored

Validity: Not available

Reliability: Not available

Copyright: 1974 Date of Most Recent Manual: Not given

Publisher: Institute for Research and Training in Higher Education, University of Cincinnati, Cincinnati, OH 45221

Comments: 90 items

Source of Information: Knaak, W. (1983)

SOURCE: Career Assessment Instrument Resource Guide, Missouri LINC, 1986.

Q. ARE THERE ANY TEACHING STYLE INVENTORIES?

A. Teaching styles inventories help teachers become more aware of their preferred ways of presenting materials in class. Of course, instructors will want to become proficient at a variety of teaching methods to best serve students who differ in their cognitive strengths and weaknesses. The following is some information about one teaching styles inventory.

INSTRUCTIONAL STYLES INVENTORY

Albert and Judith Canfield

Target Populations: Teachers

Norm Groups: 83 males and females

Purpose: Determine teaching style preferences

Title of Subcomponents: Conditions, Contend, Mode, Influence

Types of Scores: Percentiles

Scoring Information: Hand scored

Validity: Not available *

Reliability: .81 - .96 Test-retest over one week

Copyright: 1976 Date of Most Recent Manual: 1977

Publisher: Humanics, Inc., P.O. Box 5277, Northville, MI 48167

Comments: 25 multiple choice statement categories, each with four statements to be ranked. It may be used with or independent of the Learning Styles Inventory by the same authors. * Validity will be partially determined by teachers knowing their instructional style and preferences and being willing to rank them honestly.

Source of Information: Knaak, W. (1983); MMY 9:514.

SOURCE: Career Assessment Instrument Resource Guide, Missouri LINC, 1986.

Q. HOW CAN A TEACHER DISCOVER A STUDENT'S LEARNING STYLE WITHOUT USING A TEST?

A. A good way of assessing a learner is to observe him or her in class while studying. The following is a checklist to help teachers assess an individual's cognitive abilities. Older students may be able to rate themselves on some of the categories. The information gained from this checklist, although very subjective, may be used to help plan a student's learning program.

OBSERVATIONAL CHECKLIST

Student's Name: _____

Age: _____ Grade: _____

Is this a self-observation? ___ Yes ___ No

If not, print the observer's name and capacity (teacher, parent, etc.). _____ Date _____

Please answer the following questions:

Questions 1 - 9 should help you determine the types and amount of structure this student needs.

1. This student works best when tasks are:

   a. short-term.
   b. long-term.

2. S/he prefers tasks to be:

   a. assigned by an adult.
   b. cooperatively planned.

3. S/he prefers tasks to be:

   a. given at regular, predictable intervals of time.
   b. given at random.

4. S/he works best when:

   a. under pressure.
   b. free of demands.

5. S/he works best when:

   a. assignments are broken into smaller parts.
   b. large tasks are given.

6. His/her pace of work is:

   a. methodical.
   b. impulsive.

7. S/he:

   a. often asks for specific directions.
   b. sometimes asks for specific directions.
   c. rarely asks for directions.

8. S/he:

   a. needs someone to tell him or her what to do.
   b. works well without supervision.

9. S/he:

   a. often fails to finish tasks on time.
   b. finishes some tasks on time.
   c. almost always finishes tasks on time.

Questions 10 - 12 should help you determine the type of social environment in which this student learns best.

10. This student prefers to work _____ while learning.

    a. alone
    b. in a group of peers
    c. with one other peer
    d. with an older child or adult

11. S/he likes _____ activities.

    a. competitive
    b. cooperative

12. S/he:

    a. often seeks help from older students or adults.
    b. often seeks help from other students about the same age.
    c. rarely seeks help.

Questions 13 - 19 should help you determine what types of adjustments in the environment would help this student.

13. S/he learns best when reinforcement is:

    a. frequent.
    b. moderate.
    c. infrequent.

14. While working on an assignment or studying for a test, s/he is:

    a. sensitive to distractions.
    b. not bothered by potential distractions.

15. S/he works best in the

    a. early morning.
    b. late morning.
    c. midday.
    d. early afternoon.
    e. late afternoon.
    f. evening.
    g. night.

16. While in class or when working, s/he:

    a. prefers to eat, drink or chew things.
    b. does not like to eat, drink or chew things.

17. S/he likes to work with:

    a. a lot of noise.
    b. some noise.
    c. very little noise.
    d. absolutely no noise.

18. S/he prefers a _____ level of physical activity.

    a. high
    b. low

19. S/he likes to _____ while learning.

    a. sit in one place
    b. move from place to place

Questions 20 - 28 should help you determine this student's preferred modes of learning.

20. Put an X in the "preference" column by the activities the student prefers to do and put an X in the "ability" column by the activities s/he is good at:

Preference	Ability	
_____	_____	reading
_____	_____	writing
_____	_____	art projects
_____	_____	group projects
_____	_____	game playing
_____	_____	oral exams
_____	_____	using the media center

_____	_____	doing math problems
_____	_____	doing scientific experiments
_____	_____	watching films or slides
_____	_____	participating in a spelling bee
_____	_____	building things
_____	_____	taking trips or tours
_____	_____	making speeches or oral presentations
_____	_____	talking in class
_____	_____	designing things (i.e., a dollhouse)
_____	_____	working at the chalkboard
_____	_____	playing instrumental music
_____	_____	planning activities
_____	_____	doing problem-solving activities
_____	_____	doing laboratory work
_____	_____	writing letters, stories, poems or plays
_____	_____	participating in skits or plays

21. S/he reads:

    a. rapidly.
    b. at a moderate pace.
    c. slowly.

22. S/he:

    a. likes to look at pictures.
    b. doesn't like to look at pictures.

23. S/he follows visual instructions:

    a. very well.
    b. moderately well.
    c. poorly.

24. S/he follows verbal instructions:

    a. very well.
    b. moderately well.
    c. poorly.

25. S/he gives verbal messages:

    a. very clearly and is easily understood.
    b. fairly clearly.
    c. unclearly.

26. S/he writes _____ sentences.

    a. very clear and easily understood
    b. fairly clear
    c. unclear

27. Generally, his/her verbal skills are:

    a. very good.
    b. good.
    c. poor.

28. Generally, his/her writing skills are:

    a. very good.
    b. good.
    c. poor.

Q. CAN A COUNSELOR (OR SOMEONE WHO DOESN'T HAVE THE STUDENT IN A CLASS TO MAKE OBSERVATIONS) FIND OUT ABOUT LEARNING STYLES WITHOUT A TEST?

A. Perhaps the most practical method for finding out an older student's preferred methods of learning is to ask him or her questions such as, "Do you like to work alone or in groups?" or "Do you learn more from lectures or films?" Students often know what they need better than their teachers do. What they say they need should be taken seriously.

However, observation is usually more reliable with a younger student. A counselor could certainly observe the student in a classroom setting utilizing the checklist described previously.

Q. WHAT MIGHT TEACHERS DO AFTER DISCOVERING THE LEARNING STYLES OF THEIR STUDENTS?

A. Identifying a student's learning styles would be useless if it did not lead to changes in the curriculum, methods of instruction, and learning environment to meet the student's needs. Teachers must be willing to alter the way they teach, the instructional materials they use and the environment students learn in to compliment each individual's strengths. This does not mean we should ignore their weaknesses. A person who is primarily auditory may need extra help learning to read. At the same time, however, s/he will need to listen to lectures or tapes to learn history. Programs that are geared to peoples' learning styles must be individualized to accommodate individual differences. This requires a diversion from traditional teaching methods. Although this approach is hard work, it is worth it for students.

Strategies for accommodating students' learning styles are simple to devise. For example, those with visual strengths need visual modes of instruction. Those who work well with structure need structure in their curriculum. Professionals can examine the results of a student's observational checklist, learning styles inventory, formal tests, and the student's answers to questions about how s/he learns best to find out what curriculum and instructional method changes they suggest.

Q. WHAT ARE SOME STRATEGIES I CAN USE TO ADAPT MY TEACHING TO INDIVIDUAL LEARNING STYLES?

A. Rita and Kenneth Dunn's book Teaching Students Through Their Individual Learning Styles is an excellent tool for teachers who want to find creative ways to help their students learn better. More information about this book is in the next section.

One of their strategies is to divide a classroom into sections. Each section has a special learning environment. Students are assigned to the section that fits their needs the best. For example, one area may contain couches and rugs for those who need an informal environment. In another area students who need peer contact can work in groups. In a third area some students can learn with direct supervision and structure.

Another idea from Dunn is to use activity packages. These include a contract for each student stating what s/he will learn and how it will be taught. This allows students to work at their own pace and choose the modes of instruction through which they want to learn.

Also, programmed instruction sequences can be bought and adapted to fit each individual's needs. These are good for students who like to work alone and need structure. They allow each student to work at his/her own pace.

Dunn and Dunn also describe how multisensory instructional packages can be used for students who benefit from modes of instruction that combine sight, sound and touch.

Finally, the Dunns describe how tactile and kinesthetic resources can be used to teach students subjects such as spelling, math and reading. They give specific examples of how game playing and the manipulation of materials such as coat hangers, sandpaper and macaroni can be used as instructional devices.

Q. HOW CAN ASSESSMENT INSTRUMENTS BE ADAPTED TO FIT THE NEEDS OF THE STUDENT?

A. Teachers can use several techniques to adapt tests to fit a student's learning styles. They include:

- o Altering the presentation (oral and written)
- o Altering the responses (written, oral, machine scored answer sheet)
- o Dividing the assessment instrument into smaller sections and reducing the length of time
- o Developing practice items or pretest trials using the same response format as the test (teaching students how to respond)
- o Considering the appropriateness of the instrument or procedure in terms of age and maturity

- o Reducing the number of test items to permit additional time or removing items which have a higher level of difficulty
- o Using short written or verbal measures on a daily or weekly basis to allow for more feedback on student progress
- o Increasing the amount of time to complete the measure to allow for slower writing, reading or comprehension
- o Providing for short answer or simple marking; types of responses should be matched to student's strengths
- o Having students review the course or unit content verbally; student is not limited to test item recall
- o Having students develop a product or package to show knowledge of unit
- o Using checklists to observe and record learning; permits teacher to limit number of formal tests
- o Assessing participation in discussion which indicates mastery of content

Sources of Further Information

Altfest, M. (Ed.) (no date). Vocational Education for Students with Special Needs: A Teachers' Handbook.

Available from: Dept of Vocational Education
Colorado State University
Fort Collins, CO 80532

Note: Especially helpful is Chapter 3, entitled "Learning Styles and Teaching Methods." It contains suggestions for altering teaching techniques when working with students with special needs.

Knaak, W. C. (1983). Learning Styles: An Application in Vocational Education.

Available from: The National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, OH 43210

Learning Styles Inventories

Available from: Educational Activities, Inc.
Freeport, NY 11520

Learning Style Inventory Software Package (1986)

Available from: Opportunities for Learning, Inc.
8950 Lurline
Chatsworth, CA 91311

Learning Styles Network

St. John's University
Utopia and Grand Central Parkway
Jamaica, NY 11439

NOTE: The Learning Styles Network is an excellent resource center. It publishes an informative newsletter and prints books and learning style inventories. It has an excellent annotated bibliography on the subject of learning styles. The following publications are available from LSN.

Dunn, K. & Dunn, R. (1979). Learning Styles/Teaching Styles: Should They . . . Can They . . . Be Matched. Association for Supervision of Curriculum Development.

Dunn, K. & Dunn, R. (1978). Teaching Students Through Their Individual Learning Styles: A Practical Approach. Reston, VA: Reston.

Perrin, J. (no date). Teacher Inservice Training Package: Alternatives to Lecture. Jamaica, NY: Learning Styles Network.

Note: Useful in teaching students with a variety of learning styles. It teaches strategies of team learning and small group techniques.

(42.C:LEARNING.STY)